NanoVNA Issue

PLANO AMATEUR RADIO KLUB PT

FEBRUARY WWW.K5PRK.NET 2026

- Winter Field Day was a bust!
- NanoVNA in Detail

PARK HERE

Officers

(your answers begin here)

President	Mike Tharp KG5TJF	president@k5prk.net
Vice President	Bruce Cameron K6IL	vp@k5prk.net
Secretary	Damon Koch K5OCH	secretary@k5prk.net
Treasurer	B. J. Watkins K5BJW	treasurer@k5prk.net
Activites	Asif Ahmed K5SIF	activities@k5prk.net
Communications	Miranda Schwarck KE5YZP	communications@k5prk.net
Webmaster	James McCormick KG5KBP	webmaster@k5prk.net
Public Relations	Rob Forson K5WFR	pr@k5prk.net
Newsletter	Lonnie Webb KG5WHQ	newsletter@k5prk.net

EXPERIMENT AND HAVE FUN WITH YOUR RADIO

Learn more about the club at https://k5prk.net

Interact with the club at https://www.facebook.com/groups/k5prk

Have a groups.io conversation with the club at https://k5prk.groups.io/g/main

Are you ready to read the content in the newsletter? It's all technician accessible.

YOU HAVE BEEN DEPUITIZED AS ROVING JUNIOR NEWSLETTER REPORTER EXTRAORDINAIRE!

Go photograph, experiment, solder, attempt to antenna your lawn chairs. Just write it all down and send the information to newsletter@k5prk.net

PARK REPEATERS

The Plano Amateur Radio Klub operates five repeaters, which are located in Allen, Texas about 180 feet above ground level. All licensed amateur operators are welcome to join us on the air.

Our repeaters are open.

147.180 MHz + PL 107.2
K5PRK VHF
Voice Repeater

444.250 MHz + PL 79.7
K5PRK UHF
Voice Repeater

441.575 MHz +
DStar UHF
Digital Voice Port B

1295.000 MHz – 20.000
DStar 23cm
Digital Voice Port B

1255.000 MHz
DStar 23cm Digital Data

Broadcastify
K5PRK 444.250
K5PRK 147.18

If you notice problems with any of the club's repeaters, contact communications@k5prk.net via email with a detailed descriptiion of the issue.

FROM THE PRESIDENT

Building a 2026 Strategy for Plano Amateur Radio Klub—February

By Mike Tharp KG5TJF
president@k5prk.net

Program Development: Asif Ahmed has volunteered to head up a committee to develop an outreach program. We are looking for 2 to 4 volunteers from the general membership to work with Asif to develop a long-term program for the club to promote the club and the hobby.

I'd like the committee to present their suggestions in the August general meeting.

We've had a few questions about the work being done on the repeater project in general and the work at Plano Medical Center specifically. Our general meeting on 16th will feature Miranda Schwarck our communication director. Please pre-submit your questions to Groups.io before the February 16th meeting. We need to make sure Miranda has time to read the questions and develop her responses.

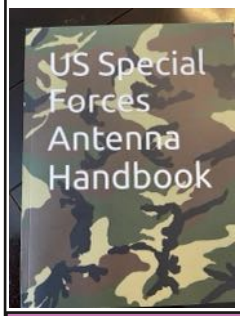
K5PRK Vice President

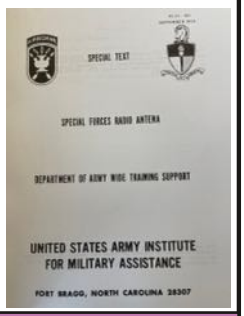
Bruce Cameron K6IL
vp@k5prk.net

This book is a gem. It is easy to read and has numerous simple applications. I'm in an HOA-restricted area, so I've had to limit the types of wire antennas I can use. The book is $20 on Amazon.

The US Army Special Forces Antenna Handbook, 1974, is an easy-to-follow field manual on antenna theory and construction for HF and VHF operations in any application, from Ham Radio use to potential SHTF or Unconventional Warfare environments.

I have used several designs from my backyard. The videos are on my YouTube page: https://www.youtube.com/@K6IL





On the cover: *Keri Varela, N2KNK, is a professional communication tower climber doing maintenance and repairs on one of the ten (and growing) WestCO fully linked repeater sites she built herself (Source: Keri Varela photo collection)*

EVENTS

Fox Hunts

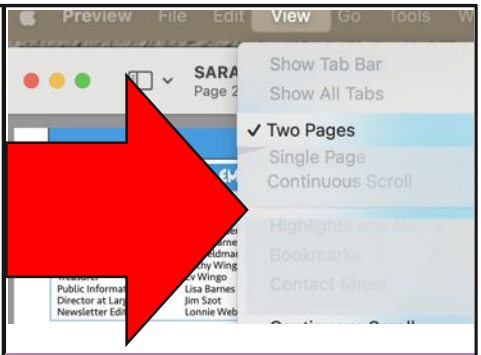
By Asif Ahmed K5SIF

UTD MicroFox—The UTD Amateur Radio Club (K5UTD) places a micro-fox on campus most weekends. It transmits CW on 433.1 MHz. Battery should last for 24 hours. The fox is outdoors, located somewhere in the main academic area of the UTD campus!

MCKINNEY—"Felicia" – built and managed by Robert Keister WZ5V, Felicia operates on 433.500Mhz FM and can be found generally in the McKinney city limits every weekend from Saturday morning through Sunday evening. You can check her status and log at https://kc5jmd.net/fox-manager-log-felicia/

FOX#1—He was the first RWK Fox, built by KE5GDB and modified by KD4C. He is big and powerful and is always found on 144.500MHz and features the smooth, soothing ticks of WWV (and occasionally some SSTV – download an SSTV app to your phone and you can see what the fox says!).

WHEATLEY—So named because he features Wheatley from Portal2 (the voice of Stephen Merchant), he was built by K5CG and has become a dependable and wily Fox. He can be found on 433.250MHz. Wheatley may be tracked here.



CONTENTS

Fourth Thursday Lunch: February 26, 2026

Next Meeting: February 16, 2026

How To Work Multiple Bands With One Antenna

By Michael Payne K5MFP
michaelpaynek5mfp@gmail.com

Off Center Fed Dipole is a popular choice for a multiband antenna. We'll refer to it in this article as the OCFD. Note: This antenna covers 80-6 meters BUT will require a good tuner to operate on some bands.

I chose this antenna design because of its ability to work 80, 40, 20, 17, 15, 12, 10 and 6 meters when using a tuner. I have even worked 160 meters on occasion—your results may vary. For the antenna wire, I decided on using 18 gauge stranded PolyStealth wire since it can handle up to 300 watts of power. Also, because of its small diameter, it is very hard to see in the air. The long leg length should be approximately 83.2 feet. The short leg length should be approximately 46.8 feet. However, I would add 12" to both ends for tuning with an antenna analyzer and cutting small amounts off of each end. The OCFD can be installed as a flat-top or an inverted V as high in the air as you can. You will need 2 insulators, one for each end and paracord works great because it doesn't disintegrate easily and can be bought with UV ray protection.

A good internal or external antenna tuner, a 4:1 current balun and LMR400 or its equivalent should be used to feed the OCFD.

I personally use this antenna. I have worked thousands of FT8 and SSB contacts on 160, 80, 60, 40, 30, 20, 17, 15, 12, 10 and 6 meters over several years.

This information was pulled from many sources. Enjoy!!

Update for members of SKCC

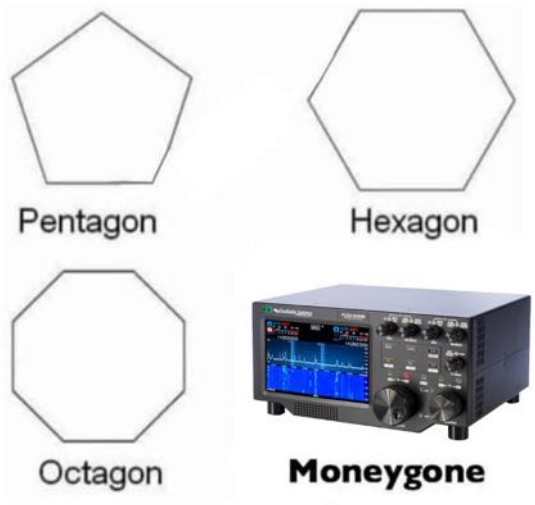
Upcoming Events & Noteworthy Historical Dates

- Feb 1: Slow Speed Saunter (24 hrs; start Sun 00:00 UTC = Sat evening & Sun US)
- Feb 5: SKS Eurosprint (1st Thu)
- Feb 6: Intro to SKCC Zoom forum @ 1500z (repeated Feb 8th @ 1800z). Contact Cathy W4CMG
- Feb 13: SKSA Straight Key Sprint Asia (Fri eve UTC)
- Feb 14/15: WES Weekend Sprintathon (Sat & Sun)
- Feb 22: Heinrich Hertz born, 1857.
- Feb 25: SKS Straight Key Sprint (Wed 00:00 UTC Tue evening US)
- Mar 1: Slow Speed Saunter (24 hrs; start Sun 00:00 UTC = Sat evening & Sun US)
- Mar 5: SKS Eurosprint (1st Thu)

SKCC HANDBOOK

Check this PDF guide doc for quick reference to all SKCC events and resources, available for download at
`https://skccgroup.com/SKCC_Handbook_2025_English.pdf`

Thanks to all who participated in our 20th Anniversary Straight Key Month event.
`https://skccgroup.com/k3y/k3y.php`



New 60-Meter Frequencies Available as of February 13

ARRL(01/15/2026)—The new 60-meter frequencies approved by the FCC in December will become available to amateurs as of February 13, 2026, along with new power restrictions on those frequencies. It's a bit confusing, as different rules apply to different segments of the band. The changes result from the FCC's action to approve a worldwide 60-meter amateur allocation made by the World Radiocommunication Conference in 2015 (WRC-15). See `https://tinyurl.com/mt8p8jpa`.

As of February 13, FCC-licensed amateur operators holding General Class or higher licenses may operate on a secondary basis anywhere between 5351.5 and 5366.5 kHz, subject to a maximum bandwidth of 2.8 kHz and maximum transmit power of 9.15 watts ERP (effective radiated power). For the purpose of computing ERP, the transmitter PEP (peak envelope power) is multiplied by the antenna gain relative to a half-wave dipole antenna. A half-wave dipole is presumed to have a gain of 1 (0 dBd). Amateurs using other antennas must maintain in their station records either the antenna manufacturer's data on the antenna gain or calculations of the antenna gain.

Here's the confusing part: The existing 60-meter channels centered on 5332, 5348, 5373, and 5405 kHz remain as secondary amateur allocations with maximum power of 100 watts ERP. However, the old channel at 5358.5 kHz is eliminated as it is now part of the new 5351.5-5366.5 kHz subband and subject to the lower power limit.

For all 60-meter transmissions, emission bandwidth is limited to 2.8 kHz or less and amateurs must not cause harmful interference to, and must accept interference from, stations authorized by the United States (NTIA and FCC) and other nations in the fixed service; and all other nations in the mobile service (except aeronautical mobile). Data or RTTY emissions in particular must be limited in transmission length so as not to cause harmful interference. Digital mode operators must be familiar with offsets in order to stay within the authorized frequencies.

Your First DIY Antenna

By Chuck Dockery N7UQ
chuck@n7uq.com

When you are first licensed you get a lot of ideas of various items around you that you wonder if they can be loaded and made to resonate for communications, like fences, rain gutters, etc. Most of us have heard about using Slinky's one of the toy's we had a child (metal Slinky of course) check this out.

Build a Portable Slinky Vertical Antenna

The Slinky Vertical is a favorite for POTA (Parks on the Air) because it packs a massive amount of wire into a tiny space using helical induction.

What You Need

- Telescopic Pole: 15–20ft non-conductive fiberglass mast (available on Amazon).
- Radiator: One original metal Slinky.
- Grounding: 2–4 wire radials (15ft each) for a counterpoise.
- Connections: 1:1 Balun or BNC-to-binding post adapter.

Quick Assembly

Mount: Secure the top of the Slinky to the tip of the extended pole using a zip tie.

Stretch: Let the Slinky drape down the pole. Secure the bottom so the coils are evenly spaced.

Wire Up: Center conductor of coax goes to the Slinky; shield goes to your radials.

Tune: Use an antenna tuner or "tap" the Slinky (shorting coils with a clip) to find your resonant frequency.

PARK BOARD OF DIRECTORS MEETING MINUTES

Plano Amateur Radio Klub
Board of Directors Meeting
February 2, 2026

Present:
Mike Tharp KG5TJF, President
Bruce Cameron K6IL, Vice President
Damon Koch K5OCH, Secretary
B. J. Watkins K5BJW, Treasurer
Rob Forson K5WFR, Public Relations Director
Asif Ahmed K5SIF, Activities Director
Tim Johnson K5TCJ, Immediate Past President

Absent:
Miranda Schwark KE5YZP, Communications Director
James McCormick KG5KBP, Webmaster
Lonnie Webb KG5WHQ, Newsletter Editor

President
Brought meeting to order at 7:06 PM

Vice President
Updated program schedule:
- February – Miranda Schwark – MCP hardware configuration overview
- March - Dr. Ed Fong – Antenna Engineering
- April – Flex Radio (tentative)
- June – Field Day
- July – Club auction

Treasurer
Treasurer report presented.

Public Relations
Trying to find a list of all home schools in Plano to send invitations to Field Day.

Secretary
January club meeting minutes posted to the board.

Communications
Absent.

Activities
Monthly area activities are being posted to the newsletter.

Website
Absent.

Newsletter
Absent.

Old Business
- ARRL equipment insurance is lapsed. Mike is reaching out to Johnny to get the login if she still has it.
- Admin access to the website, Facebook, groups.io will be board members or board appointed. Facebook has not been updated yet. Tim will explore adding current board members to Facebook.
- Still working on the Allstar donation.

New Business
- Club web page management. We need to designate a backup admin for web page management. VP is going to reach out to prior admins for help.
- Hamclub Online donation from PARK - BJ motioned to donate $100 to hamclubonline. Second by Bruce second. Unanimous.
- Voting results for recording and streaming meeting presentations. Based on the results, there is no mandate either way. Any effort would be 100% volunteer. We won't stream but if a volunteer comes forward to record, we can record and put the presentation recordings on YouTube.
- Committee to brainstorm club projects. Create a small (3-4 members) general member team that would select 3-5 activities to form a multi-year outreach and education strategy for the community to encourage interest in ham radio.
- STEM education: partner with local homeschool groups and Plano Parks & Rec
- Community Resilience: formalize support for events like the Dallas Marathon and SkyWarn
- Hands-on Mentoring: Curate and encourage an elmer list
- Local projects or topics, examples:
  - BJ's Antenna builds and SWR Saturdays
  - Tim's satellite work
  - Dave's CW expertise
  - Greg's Park in the Park
- In the next meeting, Asif will head up an outreach committee to come with and propose ideas for the general membership.

Adjourn
Treasurer motioned to adjourn. Activities Director seconded. Adjourned at 8:15 PM

PARK BOARD OF JANUARY MEETING MINUTES

Vendor	This Month	Balance Remaining
Digital Ocean	$7.68	$84.48
A. T. & T.	$75.27	$827.97
Extra Space	$64.00	$704.00
FUMC	$75.00	$750.00
Total Expenses	$221.95	$2,366.45
Annual Operating Expenses		
Equipment Insurance		$390
General Liability		$350
DNS Registration		$25.00
P. O. Box (Pd. Thru 9/26)		$268.00
Operating Supplies		$100.00
Donation Allstar Nodes		$36.00
Total Annualized Expenses		$3,757.40

January 19, 2026 General Meeting Minutes

Call to Order at 7:00 p.m.

President **Mike Tharp KG5TJF**
• Opened the meeting with the Pledge of Allegiance and roll call.
• 26 present, 17 members 9 guests

Vice **President Bruce Cameron K6IL**
• January: Isaiah Lynn - How the hobby has already impacted a teen
• February: Flex Aurora and Flex Radio product overview
• March: Ed Fong – antenna designs
• If you would like to present, please email him at VP@k5prk.net

Secretary **Damon Koch K5OCH**
• January board minutes are posted.

Treasurer **B. J. Watkins K5BJW**
See HamClubOnLine for the financial report
• 2026 projected budget presented.

Kevin N6KRG motioned to fund and pay the 2026 expenses. Second by **Larry KI5UXC.** Passed by unanimous vote.

Communications Director **Miranda Schwark KE5YZP**
No report.

Newsletter Editor **Lonnie Webb KG5WHQ**
Lonnie is traveling this month, but the January newsletter is out!
Please submit your ideas and articles to the newsletter.

Public Relations Director **Rob Forson K5WFR**
Absent – no report.

Webmaster **James McCormick KG5KBP**
Absent – no report.

Activities Director **Asif Ahmed K5SIF**
Asif was unable to attend tonight. Local activities list is printed in the newsletter.
Winter Field Day is the 24th, but a winter storm watch makes single location operation unpredictable.

VE Coordinator **Daryl Morgeson AF5QJ**
No testers tonight.

Old Business: None

New Business:
Nothing forward from the January board meeting.
Skywarn training is Saturday the 24th, with the poor weather forecast for Saturday, the training may be postponed or cancelled.

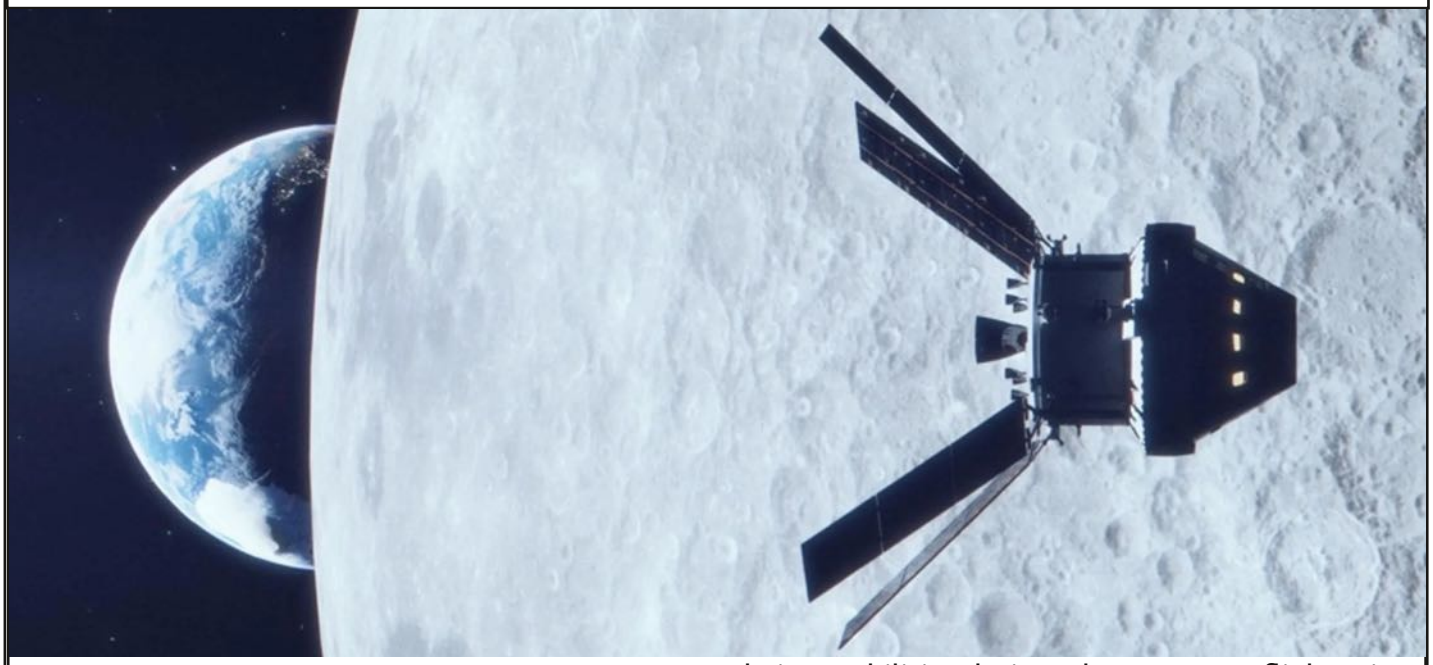
Break

50/50 raffle Winner: **Kevin Grantham N5KRG**

Program - **Isaiah Lynn K2HIL** – Ham Radio from a young amateur's perspective

Adjourn at 8:17 PM

NASA SELECTS PARTICIPANTS TO TRACK ARTEMIS II MISSION



NASA has selected 34 global volunteers to track the Orion spacecraft during the crewed Artemis II mission's journey around the Moon.

The Artemis II test flight will launch NASA's Space Launch System (SLS) rocket, carrying the Orion spacecraft and a crew of four astronauts, on a mission into deep space. The agency's second mission in the Artemis campaign is a key step in NASA's path toward establishing a long-term presence at the Moon and confirming the systems needed to support future lunar surface exploration and paving the way for the first crewed mission to Mars.

While NASA's Near Space Network and Deep Space Network, coordinated by the agency's SCaN (Space Communication and Navigation) program , will provide primary communications and tracking services to support Orion's launch, journey around the Moon, and return to Earth, participants selected from a request for proposals published in August 2025, comprised of established commercial service providers, members of academia, and individual amateur radio enthusiasts will use their respective equipment to passively track radio waves transmitted by Orion during its approximately 10-day journey.

"The Artemis II tracking opportunity is a real step toward SCaN's commercial-first vision. By inviting external organizations to demonstrate their capabilities during a human spaceflight mission, we're strengthening the marketplace we'll rely on as we explore farther into the solar system," said Kevin Coggins, deputy associate administrator for SCaN at NASA Headquarters in Washington. "This isn't about tracking one mission, but about building a resilient, public-private ecosystem that will support the Golden Age of innovation and exploration."

These volunteers will submit their data to NASA for analysis, helping the agency better assess the broader aerospace community's tracking capabilities and identify ways to augment future Moon and Mars mission support. There are no funds exchanged as a part of this collaborative effort.

This initiative builds on a previous effort in which 10 volunteers successfully tracked the Orion spacecraft during Artemis I in 2022. That campaign produced valuable data and lessons learned, including implementation, formatting, and data quality variations for Consultative Committee for Space Data Systems, which develops communications and data standards for spaceflight. To address these findings, SCaN now requires that all tracking data submitted for Artemis II comply with its data system standards.

Compared to the previous opportunity, public interest in tracking the Artemis II mission has increased. About 47 ground assets spanning 14 different countries will be used for to track the

spacecraft during its journey around the Moon.

Participants List:

Government:
Canadian Space Agency (CSA), Canada
The German Aerospace Center (DLR), Germany

Commercial:
Goonhilly Earth Station Ltd, United Kingdom
GovSmart, Charlottesville, Virginia
Integrasys + University of Seville, Spain
Intuitive Machines, Houston
Kongsberg Satellite Services, Norway
Raven Defense Corporation, Albuquerque, New Mexico
Reca Space Agency + University of Douala, Cameroon
Rincon Research Corporation & the University of Arizona, Tucson
Sky Perfect JSAT, Japan
Space Operations New Zealand Limited, New Zealand
Telespazio, Italy
ViaSat, Carlsbad, California
Von Storch Engineering, Netherlands

Individual:
Chris Swier, South Dakota
Dan Slater, California
Loretta A Smalls, California
Scott Tilley, Canada

Academia:
American University, Washington
Awara Space Center + Fukui University of Technology, Japan
Morehead State University, Morehead, Kentucky
Pisgah Astronomical Research Institute, Rosman, North Carolina
University of California Berkeley, Space Sciences Laboratory, California
University of New Brunswick, ECE, Canada
University of Pittsburgh, ECE, Pittsburgh
University of Zurich – Physics Department, Switzerland

Non-Profit & Amateur Radio Organizations:
AMSAT Argentina, Argentina
AMSAT Deutschland, Germany
Amateur Radio Exploration Ground Station Consortium, Towson, Maryland
CAMRAS, Netherlands
Deep Space Exploration Society, Kiowa County, Colorado
Neu Golm Ground Station, Germany
Observation Radio Pleumeur-bodou, France

Artemis II will fly around the Moon to test the systems which will carry astronauts to the lunar surface for economic benefits and scientific discovery in the Golden Age of exploration and innovation.

The networks supporting Artemis receive programmatic oversight from NASA's SCaN Program office. In addition to providing communications services to missions, SCaN develops the technologies and capabilities that will help propel NASA to the Moon, Mars, and beyond. The Deep Space Network is managed by NASA's Jet Propulsion Laboratory in Southern California, and the Near Space Network is managed by NASA's Goddard Space Flight Center in Greenbelt, Maryland.

Source: NASA.

Even though it is glossed over here, most if not all the participants are ham radio ops.—ed.

Army Security Agency (ASA)'s Ground Based and Aerial Radio Direction Finding — the Best Intelligence of the War!

By Anthony Perales QCWA
AI1U President
QCWA@groups.io

Date and Time:
Monday, March 30, 2026
19:00 to 21:00
(UTC-04:00) America/New York

Location: Zoom

ARRL Joins America250 as a Supporting Partner for the Nation's 250th Anniversary

02/05/2026

ARRL The National Association for Amateur Radio® announced today that it is a Supporting Partner of America250, joining the nationwide celebration of the 250th anniversary of our country in 2026.

America250 is the national, nonpartisan organization charged by Congress to lead the commemoration of the signing of the Declaration of Independence, a milestone that marks America's Semiquincentennial. Through education, engagement, and service, America250 seeks to bring Americans together to reflect on the nation's history and renew commitment to the ideals that unite us.

As a Supporting Partner, ARRL will contribute to America250's mission by highlighting the historic and ongoing role of amateur radio in connecting people, supporting public service, and strengthening civic engagement across the United States. Since its founding in 1914, ARRL and its members have played a vital role in technical innovation, emergency communications, and volunteer service in communities.

"Amateur radio has been part of the American story since the earliest days of wireless communication," said ARRL President Rick Roderick, K5UR. "For more than a century, the Amateur Radio Service has advanced the nation's communications capabilities by fostering technical innovation, developing a pool of trained and skilled operators, strengthening emergency and public service communications, and promoting international goodwill. These enduring contributions reflect why amateur radio continues to serve the public interest as a uniquely resilient and volunteer-driven national resource."

"As we approach America's 250th anniversary, it's important to recognize the organizations and volunteers who have connected and served communities for generations," said Jen Condon, Executive Vice President of America250. "Amateur radio reflects the spirit of service, innovation, and civic engagement at the heart of our nation's story, and we're proud to welcome ARRL as a Supporting Partner in this historic commemoration."

ARRL is also strengthening STEM education by bringing amateur radio into American classrooms through hands-on, project-based curricula and teacher training. By connecting youth with real-world experiences, these programs bridge educational gaps, boost student achievement, and open pathways to higher education and careers in wireless communications and related technical fields.

As part of its alignment with the US Semiquincentennial, ARRL is advancing several major initiatives throughout the year:

ARRL Year of the Club. The ARRL Board of Directors has designated 2026 as the Year of the Club, recognizing the essential role that local amateur radio clubs play in building community, mentoring new operators, and delivering public service at the grassroots level. This nationwide focus celebrates clubs as engines of civic engagement and local connection. Icom America is the Official Sponsor of the ARRL Year of the Club.

America250 Worked All States Operating Event. ARRL has already launched the America250 Worked All States (WAS) year-long event, calling on amateur radio operators worldwide to make contact with all 50 US states in honor of America's 250th anniversary. ARRL will produce an achievement award for radio amateurs who meet the challenge.

2026 ARRL Field Day is June 27—28. ARRL announces that the theme of 2026 ARRL Field Day will be "Amateur Radio: A National Resource." Field Day is an annual amateur radio activity organized since 1933, and the largest on-the-air operating event in North America. Field Day showcases amateur radio's readiness to provide resilient communications in times of need while engaging the public through hands-on demonstrations and community outreach.

ARRL's partnership with America250 reflects a shared commitment to honoring America's past while investing in the civic, technical, and volunteer spirit that will carry the nation forward.

For more information, visit www.arrl.org/America250.

OPEN HAM CLOCK

By Chuck Dockery
chuck@n7uq.com

Here is a new open source for hamclock. I just need to figure out how to load it on my existing Pi system. I personally don't want it running on my PC as it just takes up another monitor. I prefer the Pi system as I can connect it to my tv/monitor hanging on the wall. Check it out, the page loads and you put your information in then it loads the app for you.
`https://openhamclock.com`

OpenHamClock is maintained by Christopher Hetherington K0CJH.

Ham Clock was maintained by Elwood Downey, WB0OEW, who originated the project. January 29, His key went silent.

Data sources for Ham Clock will EOL in June 2026.

Also Check LATE NEWS later in this issue!

Run Open HamClock on a Pi

OpenHamClock is designed to run on a variety of platforms, including Raspberry Pi. It supports both desktop and dedicated display modes. The Raspberry Pi 3B/3B+ works fine, though build times may be longer (~5 minutes); a Pi 4 or Pi 5 is recommended for better performance. It will run on a Pi Zero W. To run OpenHamClock on a Raspberry Pi:

```
git clone https://github.com/accius/
openhamclock.git
cd openhamclock
npm install
npm start
```

Open `http://localhost:3000` in your browser. The setup wizard will prompt you to enter your callsign and grid locator. For a headless or dedicated display setup, you can use the `--headless` flag or configure it to run at boot. OpenHamClock is fully compatible with Raspberry Pi OS and can be configured to run on a 7-in screen or HDMI display, either as a desktop app or a kiosk.

Using the NanoVNA for Antenna and Component Measurements

By Gary Rondeau

The NanoVNA came on the scene 2019. It is taking the place of more traditional antenna analyzers for many hams. There are a couple of reasons for this. It is significantly less expensive than most dedicated antenna analyzers, and it is a more capable instrument. However, its small size, the calibration requirements, and arcane menus for stand-alone use can make it less user friendly than, for example, a Rig Expert antenna analyzer. I find the flexibility and functionality of the NanoVNA to be worth dealing with its idiosyncrasies. I almost always use the NanoVNA connected to my computer running the program NanoVNA Saver. This is a handy program that allows multiple segments for the frequency span for much better resolution than the 101 points/scan that is the native functionality. It has many ways to display the data, and you can save the measured data. The program also leads you through the calibration procedure. There are many tutorials on this device. I am going to show you how I use it for making measurements on my antennas, and how to use it to characterize coils and transformers in the HF frequency range.

Most often I measure my antenna SWR from the shack, so that the feed-line is included in the measurement. I often use 75 Ω coax, which makes feed line is part of the matching network. In-shack measurement is convenient since I can just disconnect the radio and plug the antenna cable into the NanoVNA. Then I measure directly what the radio sees for the antenna match. Before you can do anything, however, you have to calibrate the instrument. This involves supplying a short, open, and a load (SOL) for the Ch0 output of the NanoVNA. The instrument comes with a set of open, short, and 50 Ω load SMA connectors for you to use. For the HF range, you don't have to be so picky about coax connected calibration references. Instead you can just leave the cable open, short pins with an alligator clip and use any convenient 50 Ω load you have on hand. I have a special SMA to short-clip-lead fixture I use for measuring components. I calibrate it just by setting the clips shorted, separated, or clipped to a 51Ω resistor. Once you get a good calibration, I use ten segments and maybe some averages, then save it to a named calibration file so you can use it again for the same fixture and sweep range. When you load a previous calibration that you want to use, make a quick check by scanning a 50Ω load to be sure you get what you would expect.

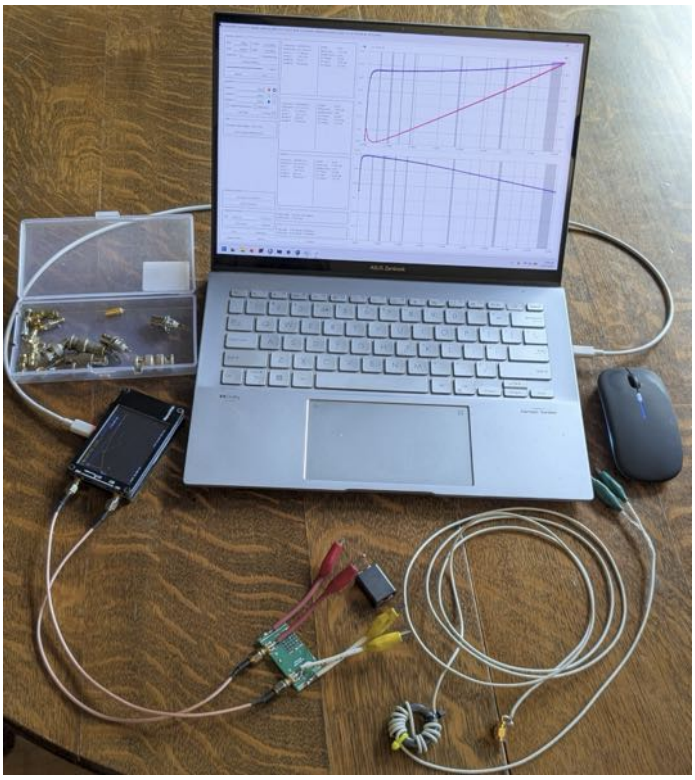


Figure 1. NanoVNA with a few accessories using laptop display with NanoVNA Saver software

The photo above shows a laptop computer controlling the NanoVNA, here testing an RF transformer using a two-port clip-lead fixture. Also shown is a probe cable that includes a common mode choke to ensure that the clip-leads float, and are not influenced by the ground potential of the laptop and NanoVNA. This is useful when making measurements in the presence of EM fields, like in the near-field of an antenna. Calibration standards and coax adapters that are frequently needed are in the plastic box.

In-Shack SWR Measurement

This is the easy one. Just connect the NanoVNA Ch0 to the antenna cable and take a sweep. Use the NanoVNA Saver to display VSWR. If you have a multi-band antenna, sweep the entire spectrum

from 1 MHz to 30 MHz. Or just focus in on the band(s) of interest.

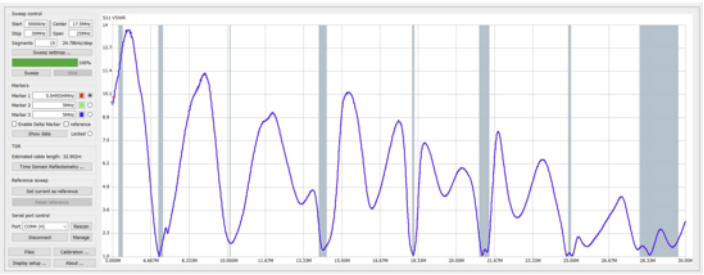


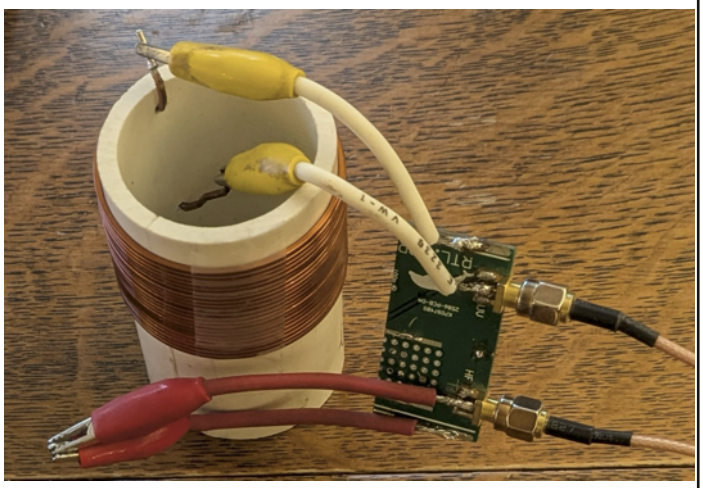
Figure 2. SWR for my Hex Beam antenna on the cable in the shack.

On-the-wire Impedance Measurement

Maybe you want to measure what is going on at the antenna feed-point. This usually means the antenna needs to be installed at height. Reaching the antenna terminals can be a challenge. Recently I was building a vertical wire array. The wire feed points were close enough to the ground that I could reach them on a step ladder. I tried to make a measurement with the clip-lead fixture I use with the NanoVNA. Holding the NanoVNA and the laptop up on the step ladder, I managed to make a few measurements. But I found that whether I put the NanoVNA's 'hot' wire on the upper or lower wire of the antenna changed the way the sweeps looked. It is always a good idea to do the "swap-the-leads check". If the two sweeps look different then something is wrong. Often the currents are not balanced on the probe coax. This can easily happen if there is capacitive coupling between the antenna and the NanoVNA and/or its connections to the laptop or a grounded power connection. I built a probe cable that included a ferrite loaded inductor to choke off any common mode current. A dozen turns of tiny coax on FT114-43 core made things look right. The instrument was calibrated at the probe clip-leads to 'calibrate out' any effect of the long probe's added cable length.

Measuring capacitance, inductance, self-resonance of coils

One of the best things about having a NanoVNA is that you can build your own custom inductors and transformers and characterize them. You quickly discover when your nice coil is an inductor and when it starts looking like a capacitor! This happens quite often with naively built coils for HF.



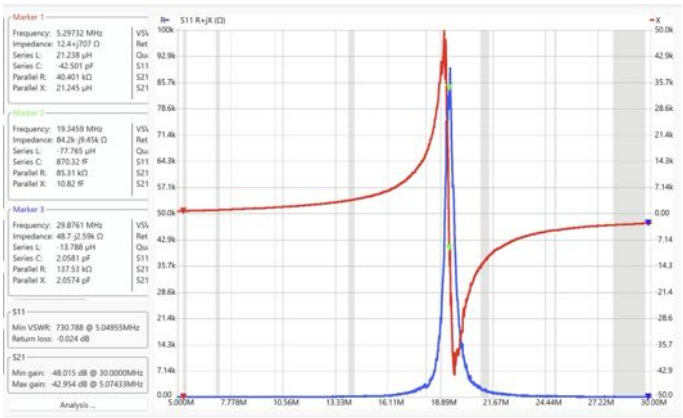


Figure 3.

Here I tested a roughly 20 µH coil built on some PCV pipe. I used the clip-lead test jig and ran a sweep of the entire HF spectrum from 5 MHz to 30 MHz. What you immediately see with the NanoVNA S11 impedance sweep is a distinct resonance at about 19.3 MHz. The NanoVNA Saver software lets you to place markers and the software calculates effective series inductance or capacitance for you. I placed the markers at the very low frequency end, on the resonance, and at the high frequency end. At the low frequency end, the coil looks most like an inductor — and the software calculates the value at 21.2 µH. At the high frequency end, the "Series L" is negative — which makes no sense, but the "Series C" is calculated as 2.06 pF. These are good rough values for the inductance and the parallel parasitic capacitance of the coil. You can make another estimate of the parasitic capacitance by using the resonant frequency and the low frequency derived inductance to calculate the capacitance. At 50 kHz, the inductance measured 19.6 µH, the resonance was at 19.35

MHz, so that calculated capacitance will be $C = 1 / [L (2\pi f)^2] = 3.45$ pF. This is a better estimate than using the value at the top end of the plotted spectrum because the frequency was not sufficiently high that the inductive reactance was negligible compare to the capacitive reactance. When dealing with such small values of capacitance it is often difficult to generate reproducible results. Just placing the coil in the photo lying with the wires against the wooden table changed the resonant frequency to 18.54 MHz yielding an equivalent capacitance of 3.76 pF. But this stuff happens in real life too. What happens if it rains on you coil? Spray it with water and see!

Measuring RF transformer properties

Now let's move on to two-port measurements. Our example will be 1:1 RF transformer wound on a binocular core. First, look at a transformer model that includes functional and parasitic components.

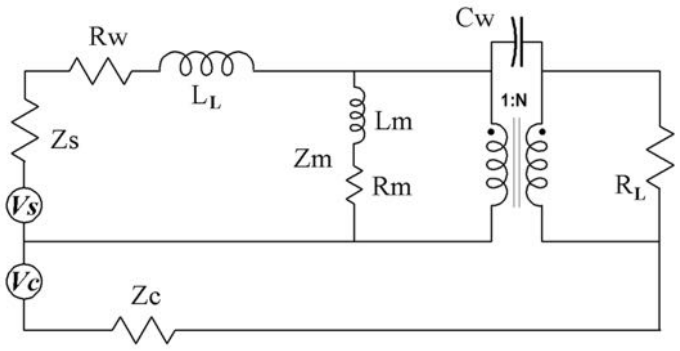


Figure 4.

For simplicity the secondary side leakage inductance or winding resistance are reflected across the transformer and lumped together with the primary side components. For most RF transformers the quantities that most effect performance are the primary magnetizing inductance Lm, the leakage inductance LL, and the inter-winding capacitance Cw. Rm is included to represent core losses; copper losses are Rw. The transformer itself is ideal, transforming voltages and currents on the primary to the secondary winding according to the turns ratio.

When the NanoVNA is fed into the primary side at Vs, the quantities LL and Lm can be obtained from sweeps with the secondary of the transformer shorted and open respectively. The inter-winding capacitance can be found by connecting the NanoVNA into the shorted primary and secondary windings. Finally we can look at the throughput, the Ch0 S11 input at Vs, and the Ch1 S21 input connected as the load of the transformer.

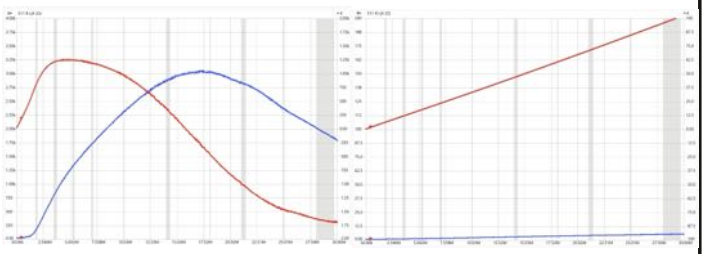


Figure 5.

The plots above show the NanoVNA impedance plots on the transformer primary when the secondary is open (left) and shorted (right). For the secondary open case, the inductive reactance (red) is proportional to frequency just until about 2 MHz, whereafter it deviates strongly from a pure inductance and shows significant real impedance. This is typical of inductors that involve magnetic materials such as ferrite. The plot on the right, with the transformer secondary shorted, shows much lower overall impedance throughout the entire frequency span, with the real resistance staying near zero and the reactance linearly increasing with frequency throughout the span. In terms of the transformer model, this is the leakage inductance LL, due to magnetic flux that is not coupled through the ideal transformer. The left plot shows the magnetization inductance Lm (plus LL, which is small), and can only be really defined at low frequencies before core losses become significant. NanoVNA Saver says the inductance a ~500 kHz is about 60 µH for the three-turn transformer. This means that the core constant AL, the inductance per turn squared is: 60 µH/9 = 6.7 µH/N^2.

This transformer was constructed for an isolation application where common mode rejection was crucial. Hence the capacitive couple across the windings needs to be measured. The S11 clip-leads across the shorted primary and secondary windings yielded the sweep below which show inter-winding capacitance of about 2.6 pF.

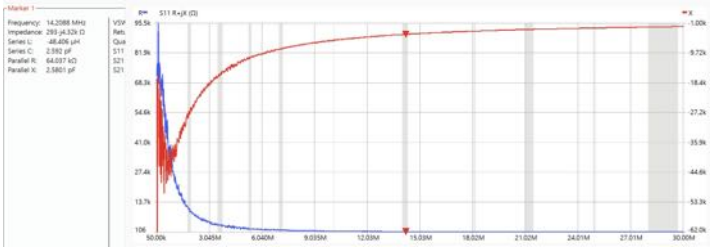


Figure 6. S11 from primary to secondary shows inter-winding capacitance

Now let's look at the throughput with a two-port sweep. The S21 port is a 50 Ω load for the secondary of the transformer. The impedance seen at the primary side by the S11 plot show a real impedance of about 50 Ω and linearly increasing reactance that is consistent with the previously measure leakage inductance of about 580 nH.

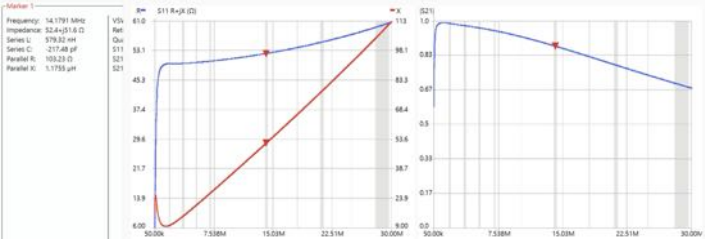


Figure 7.

The |S21| plot shows that at low frequency, ~500 kHz, The throughput is very close to one. As the frequency increases the throughput drops off dues to two effects. First, some signal is reflected back to the S11 source as the leakage inductance contributes to a larger fraction of the input impedance. This gives rise to increasing VSWR with frequency. Second, there will be some core losses that contribute to the declining |S21|, which also give rise to heating the core. There are two terms that seek to distinguish these two situations. Insertion Gain (or Loss) is just the power ratio of what goes in from the S11 port to what comes out to the S21 port. This is just $|S21|^2$ since we are dealing with power rather than voltage. Transmission Gain (or Loss) is concerned with power loss within the device under test (DUT), and excludes the S11 input power that is reflected back to the source by any mismatch in coupling to the DUT. Hence any reflected power, $|S11|^2$ must be not be included in the Transmission Gain.

$$\text{Insertion Gain} \equiv G_1 = |S21|^2$$

$$\text{Insertion Loss} = -20 \log |S21| \text{ dB}$$

$$\text{Transmission Gain} \equiv G_T = |S21|^2 / (1 - |S11|^2)$$

$$\text{Transmission Loss} = -10 \log[\, |S21|^2 / (1 - |S11|^2)] \text{ dB}$$

$$\text{Transmission Loss \%} = 100\,(1\text{-}G_T)\ \%$$

Frequency dependent graphs for these quantities are not available in the NanoVNA Saver software, so instead we will have to import the NanoVNA's .sp2 output files into Excel or something similar to generate these charts.

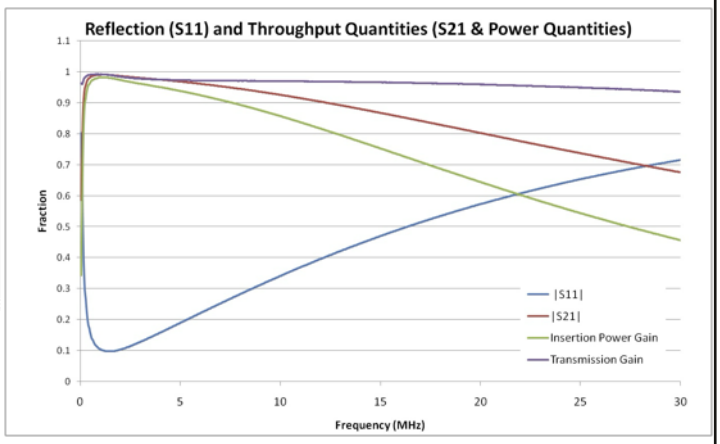


Figure 8.

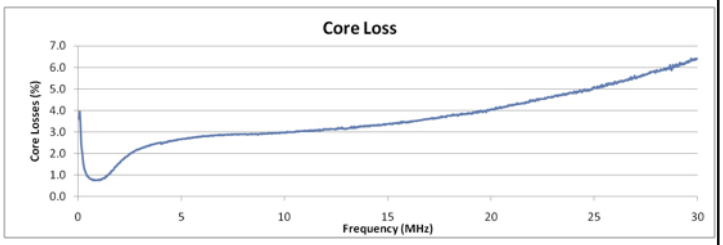


Figure 9.

The .sp2 files provide the real and imaginary components for the S11 and S21 parameters at each frequency point. The insertion gain and transmission gain are calculated in the spreadsheet according to the formula above. The core losses are just $1\text{-}G_T$ and are plotted above as a percentage of the input power. This can be important if you are concerned about a core overheating. The power loss may be insignificant, but if the core warms up beyond the Curie temperature, it will lose all effi-

ciency and the SWR will increase markedly.

You may wish to measure a transformer that is designed to provide an impedance transformation. A common way to do this is to provide the secondary of the transformer with a load that would reflect back to the primary as 50 Ω. For instance, if the transformer has 1:2 turns ratio (and Impedance transformation 1:4), then the 200 Ω load can be a 150 Ω resistor in series with the 50 Ω S21 port. It is best to calibrate the load-matching attenuation resistor over the frequency range of interest. Then use the calibrated attenuation factor when calculating insertion and transmission losses with the spread sheet.

Characterizing the Core Material

Ferrite manufacturers specify the "complex permeability" of their materials. This is just a frequency dependent complex number, μ that when multiplied with the low frequency core constant and the number of turns squared, will generate the observed complex impedance, R + jX, of the inductor. Since we measured the inductor impedance and know the number of turns, with a little arithmetic we can generate the complex permeability curves. Let's consider this example with a FairRite core model 5943006401 which is a 1" O.D. toroid. I calibrated the jig and ran the S11 impedance plot.

Figure 10.

The inductance measured at ~500 kHz (marker on plot) was about 1.0 μH for the single turn where the slope of the reactance is quite linear and the resistance is near zero. Thus A_L for the core is about 1.0 μH/N^2.

Derive the inductance of a toroid

We need to get from the turns and geometry to a value of inductance without a core if we wish to have some permeability factor which will multiply to get us the situation with a core. Recall that inductance is just how much magnetic flux you get for a given current: $L = N\Phi/I$

And that flux is just the integral of the magnetic field over a surface: $\Phi = \iint B \cdot dA$

We can make the approximation that all of the flux is concentrated in the ferrite, so the above integral just becomes: $\Phi = w \int_{R1}^{R2} B(r)dr$ where w is the width of the toroid and r_2 and r_1 are the outer and inner radii respectively.

We can use Ampere's law: $\iint B \cdot dl = \mu\mu_0 NI$ and note that if we choose any arbitrary path of radius r, we can write: $2\pi r B(r) = \mu\mu_0 NI$ or $B(r) = \mu\mu 0NI/(2\pi r)$, which we can now substitute into the integral above for flux and get:

$\Phi = w \int_{R1}^{R2} B(r)dr = \mu\mu_0 NI/(2\pi)\, w \int_{R1}^{R2} 1/r\, dr = \mu\mu_0 NI/(2\pi)\, w \ln(r_2/r_1)$

then using the equation for inductance we can substitute in the flux and get the inductance for a toroidal coil.

$L = N\Phi/I = \mu\mu_0 N^2/(2\pi)\, w \ln(r_2/r_1)$ the inductance of N turns wound on toroid form defined by w, r_2 and r_1.

Extract the complex permeability from the measurement

The inductive reactance would be

$XL = 2\pi fL = 2\pi f\, \mu\mu_0 N^2/(2\pi)\, w \ln(r_2/r_1) = \mu\mu_0 N^2 f\, w \ln(r_2/r_1)$

We can generalize the expression for inductance to include a resistance term if we allow μ to be a complex number $\boldsymbol{\mu}(f) = \mu' - j\,\mu''$. Then we can write an impedance as:

$Z = R + j\,XL = \mu_0 N^2 f\, w \ln(r_2/r_1)\, \boldsymbol{\mu}(f) = j\,\mu_0 N^2 f\, w \ln(r_2/r_1)[\,\mu' - j\,\mu'']$

$Zm = Rm + jXLm = \mu_0 N^2 f\, w \ln(r_2/r_1)\,[\,\mu'' + j\,\mu'\,]$

If we look back at the transformer model, we

can identify Z as the magnetization impedance Zm which is what the VNA is measuring for us. If we take the measured S11 impedance and factor out $j\mu_0 N^2 f w \ln(r_2/r_1)$, which is essentially the "air core" μ=1 impedance for the geometry in question, we are left with the complex permeability $\boldsymbol{\mu}(f)$.

Again we can use Excel to do the arithmetic for us. However first we must do the computation from the S11 parameters to get the impedance: $Z_{in} = Z_0(1+S11)/(1-S11)$ where Z_0=50 Ω for the NanoVNA as calibrated and S11 is the complex back reflected values provided in the .sp1 file. If we let S11 = A + jB, I'll let you verify that we can write the impedance as $Z_{in} = R + jX$ where $R = Z_0(1-A^2-B^2)/(1+A^2+B^2-2A)$ and $X = 2Z_0B/(1+A^2+B^2-2A)$. This will let us generate an impedance plot like the one above, but in Excel. From there the $\boldsymbol{\mu}(f)$ plot follows directly from the equation above.

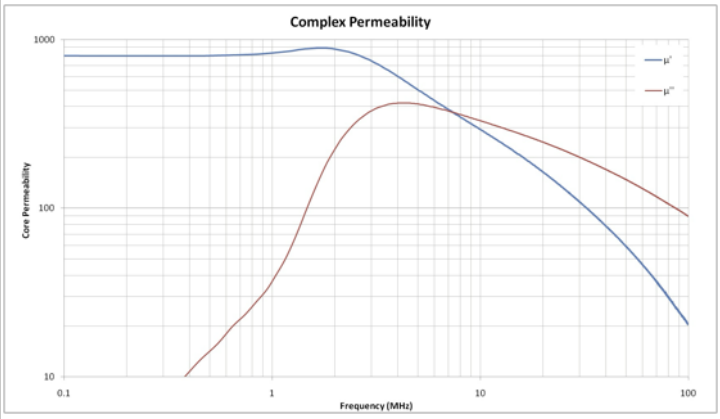


Figure 11.

This curve compares well with the manufacturer's data sheet for type 43 material.

Should you wish to delve deeper into how a network that contains a transformer you would like to build will behave, there is an analysis program, SimNEC, that will accept the S parameters from the NanoVNA, via the .sp2 file, to completely specify a transformer's frequency dependent properties.

With the NanoVNA tool you can go forth to build and test coils and transformers you may need for specialized matching networks. You will quickly gain experience dealing with stray capacitance and leakage inductance, and discover construction methods that provide some control over the results you are after.

Gary Rondeau retired from being the design engineer at Applied Scientific Instrumentation where he did a lot of electronic design, mechanical and optical engineering, and invention. Formal training included a stint at Cornell University where he received a PhD for work on a large pulsed power ion beam generator. In recent years he has taken up the ham radio hobby and hfound the technology and the community stimulating, naturally inspiring a few blog articles.

Source:*https://squashpractice.com/2025/12/27/using-the-nanovna-for-antenna-and-component-measurements/?unapproved=30612&moderation-hash=5fe12159d4c04929eec226b22c5821ad*

RADIO QUEST
TECHNICIAN LEVEL

	Found an Elmer(someone to answer how-to questions)
	Listened on a frequency before talking
	Used your call sign on your handy talkie(HT)
	Spoke to another person on a regular (simplex) frequency)
	Spoke on club repeater
	Sent an APRS update
	Logged in on QRZ.com and created a logbook
	Made a contact via satellite/ISS on an HT
	Got my grid location
	Gave a signal report
	Send a CW/Morse code CQ
	Attended a ham club meeting
	Joined the ARRL
	Checked-in on a club info net
	Asked a question on a net or a club meeting
	Joined breakfast Eyeball QSO on Saturday
	Passed a license exam
	Signed up for EchoLink
	Bought a cheap Chinese radio
	Bought an expensive Japanese radio
	Built a radio
	Built a j-pole/2m antenna
	Made a balun
	Made an RF choke
	Made a go-bag/go-box
	Went on a POTA expedition
	Asked a new contact what radio/ antenna they were using
	Was asked what radio/antenna you are using
	Served as a net control operator
	Join the ARRL

CHECK ALL THAT YOU HAVE COMPLETED. HAVE YOU FULFILLED THIS MONTH'S QUEST?

DO YOU HAVE SUGGESTIONS FOR NEXT MONTH'S RADIOQUEST?
LET ME KNOW HOW YOU DID. POST SCREENCAPS ON FACEBOOK FOR BRAGGING RIGHTS!

newsletter@k5prk.net

You can't think of anything new to do with your radio?

Here are a lot of suggestions. Should you come up with a new one, let me know.

BTW, If you have done all these things, it's time to level up! We have a testing sessions in the area just about every week.

RADIO QUEST
GENERAL LEVEL

	Tuned up your first HF frequency
	Made a DX contact(out of the continental US)
	Joined a traffic net
	Sent a radiogram
	Worked a Field Day contact
	Participated in a contest
	Used a digital mode
	Sent an email over the radio
	Connected your radio to the computer/internet
	Used a SWR meter
	Grounded your station
	Grounded your antenna
	Applied a lightning arrestor
	Drove a ground rod
	Computed RF emissions for your station
	Ran your station on a battery
	Powered your station from a car power supply
	Created your first scratch paper log
	Installed logging software(such as hamrs/n1mm)
	Logged on to LOTW
	Used a pi*star
	Used a Watt meter
	Made a counterpoise
	Threw a wire up in a tree for an antenna
	Know who Dave Cassler is
	Have given a Roger Roger (RR)
	Stood on a ladder and wondered *"Will it antenna?"*
	Joined RACES
	Listened to a weather net

CHECK ALL THAT YOU HAVE COMPLETED. HAVE YOU FULFILLED THIS MONTH'S QUEST?

DO YOU HAVE SUGGESTIONS FOR NEXT MONTH'S RADIOQUEST?
LET ME KNOW HOW YOU DID. POST SCREENCAPS ON FACEBOOK FOR BRAGGING RIGHTS!

newsletter@k5prk.net

Open-hamclock-backend Aims to Keep HamClock Ticking

February 3, 2026—A group of ham radio operators have stepped up to keep HamClock operating beyond it's scheduled sunset in June. An open source replacement for the backend processes required to keep the popular HamClock project alive is well under way.

Developed by Brian (KO4AQF) and Austin (KN4LNB), open-hamclock-backend is designed to be a drop-in replacement for the backend server that populates HamClock with its signature set of 40+ data points and visualizations.

From Brian (KO4AQF):

HamClock relies on an internet backend to provide live space-weather, propagation, DX, and news data. With the passing of its original developer, that backend is no longer being maintained, which means many HamClocks will gradually lose live functionality even though the devices themselves still work.

An open-source replacement backend is now being developed that recreates the same data feeds HamClock expects, using publicly available sources such as NOAA, space-weather services, PSK Reporter, and DX information sites. From the HamClock's point of view, nothing changes — it connects to the same paths and receives the same data formats, without any firmware modification. We are very close to replicating nearly every possible data source and making slight improvements along the way.

The system is free, open-source, and designed to run locally on a small Linux system, allowing individual hams or clubs to keep existing HamClocks fully operational. The goal is preservation, not reinvention — keeping HamClock working exactly as intended for years to come.

Currently, open-hamclock-backend is designed to be self-hosted, requiring any user wishing to extend HamClock's usefulness beyond June to run the software themselves. However, options are being considered for a centralized version to be stood up for all HamClock users to take advantage of.

CLUB CALENDAR

FEBRUARY

Sunday 1	Monday 2	Tuesday 3
1p Military Veterans D-Star Net @ REF026A **7p** DARC (Dallas) Meeting on the Air **7p** Intl D-Star Net @ REF001C **8p** K5TIT D-Star Net @ REF33B **9p** Collin County ARES @ WD5ERD	**7p** GARC (Garland) Club Meeting **7:30p** Texas ARES Net @ 3.873 MHz **7:30p** RWK -- Meeting on the Air @ 147.12, PL110.9 **8:30p** MARC Simplex net	**7p** DARC (Dallas) General Meeting **7p** HAM (Mesquite) InfoNet @ WJ5J (145.310 PL 110.9) **7:30p** Ark-La-Tex D-Star Net @ REF048B **8p** Texas D-Star Net @ REF004B **8p** Lucas Open Net
1p Military Veterans D-Star Net @ REF026A **8** **7p** DARC (Dallas) Meeting on the Air **7p** Intl D-Star Net @ REF001C **8p** K5TIT D-Star Net @ REF33B	**7:30p** Texas ARES Net @ 3.873 MHz **9** **8:30p** MARC Simplex net **School Club Roundup**	**7p** HAM (Mesquite) InfoNet @ WJ5J (145.310 PL 110.9) **10** **7:30p** Ark-La-Tex D-Star Net @ REF048B **8p** Texas D-Star Net @ REF004B **8p** Lucas Open Net **School Club Roundup**
1p Military Veterans D-Star Net @ REF026A **15** **2p** Texas RACES Net (HF) @ 7.255MHz **7p** Intl D-Star Net @ REF001C **8p** K5TIT D-Star Net @ REF33B	**6p** VE Testing @ K5PRK **16** **7p PARK Monthly Meeting** **7:30p** Texas ARES Net @ 3.873 MHz **8p** American Legion Post 315 Radio Club Net @ W5SRA **8:30p** MARC Simplex net	**7p** HAM (Mesquite) InfoNet @ WJ5J (145.310 PL 110.9) **17** **7:30p** Ark-La-Tex D-Star Net @ REF048B **8p** Texas D-Star Net @ REF004B **8p** Lucas Open Net
1p Military Veterans D-Star Net @ REF026A **22** **7p** DARC(Dallas) Meeting On The Air **7p** Intl D-Star Net @ REF001C **8p** K5TIT D-Star Net @ REF33B **9p** Collin County ARES Training Net @ W5MRC **Intl DX CW Contest**	**7p** GARC (Garland) Club Meeting **23** **7:30p** Texas ARES Net @ 3.873 MHz **7:30p** RWK -- Meeting on the Air @ 147.12, PL110.9 **8:30p** MARC Simplex net	**7p** HAM (Mesquite) InfoNet @ WJ5J (145.310 PL 110.9) **24** **7:30p** Ark-La-Tex D-Star Net @ REF048B **8p** Texas D-Star Net @ REF004B **8p** Lucas Open Net
1p Military Veterans D-Star Net @ REF026A *1* **2p** Texas RACES Net (HF) @ 7.255 MHz **7p** Intl D-Star Net @ REF001C **8p** K5TIT D-Star Net @ REF33B	**7p** DARC (Dallas) Geek Net *2* **7p** GARC (Garland) Club Meeting **7:30p** Texas ARES Net @ 3.873 MHz **8:30p** MARC Simplex net	**7p** HAM (Mesquite) InfoNet @ WJ5J (145.310 PL 110.9) *3* **7:30p** Ark-La-Tex D-Star Net @ REF048B **8p** Texas D-Star Net @ REF004B **8p** Lucas Open Net

FEBRUARY

Wednesday 4	Thursday 5	Friday 6	Saturday 7
6:50p NTx Readiness QST Net @ 7.27750 MHz LSB **8p** N5SAC Weekly Info Net @ W5SRA **8p PARK Informal Net @ 147.180+ MHz, (107.2)** **8p** Simplex Net @ 146.54 MHz	**11a** GARC (Garland) Crony Lunch @ Judy's Cafe **8p** GARC (Garland) InfoNet **8p** Denton County ARES Training Net	***8:30,9a*** North Texas Hospital Radio Club weekly check in	**12p** Garland "Hands-On" Gathering **7p** DARC (Dallas) Tech Net **9p** Saturday Night D-STAR Net@REF029A
6:50p NTx Readiness QST Net @ 7.27750 MHz LSB **11** **8p** N5SAC Weekly Info Net @ W5SRA **8p PARK Informal Net @ 147.180+ MHz, (107.2)** **8p** Simplex Net @ 146.54 MHz **School Club Roundup**	**11a** GARC (Garland) Crony Lunch @ Judy's Cafe **12** **7p** HAM (Mesquite) Monthly Meeting **8p** GARC (Garland) InfoNet **8p** Denton County ARES Training Net **School Club Roundup**	***8:30,9a*** North Texas Hospital Radio Club weekly check in **13** **School Club Roundup**	**9a** W5YI VE Test Session @ Wylie **14** **7p** DARC (Dallas) Tech Net **9p** Saturday Night D-STAR Net@REF029
6:50p NTx Readiness QST Net @ 7.27750 MHz LSB **18** **8p** N5SAC Weekly Info Net @ W5SRA **8p PARK Informal Net @ 147.180+ MHz, (107.2)** **8:30p** NTx ARES Net **8p** Simplex Net @ 146.54 MHz	**11a** GARC (Garland) Crony Lunch @ Judy's Cafe **19** **8p** GARC (Garland) InfoNet **8p** Denton County ARES Training Net	***8:30,9a*** North Texas Hospital Radio Club weekly check in **20**	**9a** W5SRA Laurel VE Test Session **21** **9a** GARC (Garland) ECC Open House **7p** DARC (Dallas) Tech Net **9p** Saturday Night D-STAR Net@REF029A **Intl DX CW Contest**
6:50p NTx Readiness QST Net @ 7.27750 MHz LSB **25** **7p** Murphy CERT Net @ W5SRA **7p** N5SAC Club Meeting **8p PARK Informal Net @ 147.180+ MHz, (107.2)** **8p** Simplex Net @ 146.54 MHz	**11a** GARC (Garland) Crony Lunch @ Judy's Cafe **26** **12p Fourth Thursday Lunch @ Poor Richard's Cafe** **8p** GARC (Garland) InfoNet **8p** Denton County ARES Training Net	***8:30,9a*** North Texas Hospital Radio Club weekly check in **27**	**7p** DARC (Dallas) Tech Net **28** **9p** Saturday Night D-STAR Net@ REF029A
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Rebirth Of A RACES Ham Club

A Decade of Service, A New Era of Readiness: The Transition to N5SAC

History in public service is often measured by the moments when things go right because someone was prepared. For the City of Sachse, that preparation began in earnest on February 3, 2015, when Jeff Lock (N5LOC) first put his 2-meter repeater into service for RACES.

For ten years, Jeff provided a critical lifeline from his own residence, serving as the primary frequency for our SKYWARN nets and emergency activations. The Sachse RACES/ARES team owes Jeff a massive debt of gratitude; his dedication was the backbone of our local response through countless North Texas storm seasons.

Bridging the Gap: Thank You, W5SRA

During this transition period, while the primary RACES system is offline, we want to extend our sincere thanks to the W5SRA Club. Their continued support and the use of the W5SRA repeater have been invaluable in keeping our teams connected. We look forward to working closely with W5SRA members as we collaborate on hardening our emergency communications infrastructure for the entire City of Sachse.

The Transition to N5SAC

With Jeff's retirement, his station has officially gone offline. To ensure the City isn't left in silence during a disaster, the RACES/ARES team has successfully acquired the 145.2500 MHz pair. We are proud to announce that this frequency, along with a brand-new 70cm companion, will now be reborn under the official RACES call sign: N5SAC.

The Mission: Hardening City Infrastructure

Because the previous hardware was part of a private residence and is no longer available, Sachse RACES/ARES is rebuilding the system from the ground up. Our goal is to move to a hardened, commercial-grade infrastructure that can withstand the worst North Texas weather.

Technical Specifications for the N5SAC System

VHF Primary: 145.2500 MHz (Restoring the legacy pair). UHF Tactical: 442.625 MHz (+5.00 MHz offset, 20k0F3E Wide FM).

N5SAC Critical Hardware Requirements

To get these frequencies "storm-ready," we are seeking professional suggestions and equipment donations for:

Commercial-Grade Repeaters: Public-safety grade hardware (Motorola Quantar/MTR, Kenwood TKR) capable of 100% duty cycles.

High-Rejection Duplexers: Our top priority is acquiring "cans" for both 145.250 and 442.625 to handle high-profile tower environments.

Emergency Power: Deep-cycle battery banks and 1/2" Heliax to ensure N5SAC stays online during power grid failure.

Call to Action for Sachse Operators

Jeff (N5LOC) proved what one dedicated operator could do for a city. Now, it is the responsibility of the RACES/ARES team to carry that torch forward.

Hardware Scouting: If you have leads on surplus commercial gear or have professional-grade equipment to donate, please notify RACES leadership.

Technical Deployment: we are seeking operators with RF engineering or solar power experience to assist with the build.

The N5SAC Fund: We are seeking contributions to the Emergency Communications Fund to cover the costs of the new duplexers and site integration.

The Goal: When the sirens sound in Sachse, our RACES and ARES teams must have a reliable, robust system—N5SAC—standing by to serve the City and our partners in Dallas and Collin Counties.

Have gear or technical suggestions? Please contact the RACES/ARES Repeater Trustee, Gregory Kent KK6AXF, at greg@sachsecert.org to help us restore this vital city resource.

JOIN THE ARRL

About ARRL®

ARRL The National Association for Amateur Radio® was founded in 1914 as The American Radio Relay League, and is a noncommercial organization of radio amateurs. ARRL's mission is to promote and protect the art, science, and enjoyment of amateur radio, and to develop the next generation of radio amateurs. ARRL supports members with opportunities to discover radio, to develop new skills, and to serve their local communities. ARRL's youth initiatives include programs to inspire students and advance STEM education through amateur radio, and to encourage pathways to higher education and careers in wireless communications and related technical fields. ARRL is also the Secretariat of the International Amateur Radio Union (IARU). For more information about ARRL and amateur radio, visit www.arrl.org.

I made it back! (...but I am thinner)
—your friendly neighborhood editor

UPGRADE Your License
February 16 6p

Weekend Breakfast
Every Saturday 7a
@Poor Richard's Cafe

Casual Information Net
Every Wednesday 8p

Fourth Thursday Lunch:
February 26, 2026

Next Meeting:
February 16, 2026